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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,718	09/15/2003	Nobuyuki Ito	CU-3360	1336
26530 7590 05/01/2007 LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			EXAMINER LIN, JAMES	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 05/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/662,718	Applicant(s) ITO ET AL.	
	Examiner Jimmy Lin	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-26 is/are pending in the application.
- 4a) Of the above claim(s) 7-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/21/2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawase (U.S. Patent No. 6,730,357) in view of Gordon et al. (U.S. Patent No. 4,811,038), Nanto et al. (U.S. Patent No. 5,921,836), Pham et al. (U.S. Publication No. 2002/0127344), and Eida et al. (U.S. Publication No. 2001/0050532).

Kawase teaches a method for manufacturing an organic EL display by an ink jet method (col. 1, lines 17-25), wherein a uniform organic EL layer is formed by sequentially continuously carrying out processes of discharge-placing at least an organic EL material in a form of a solution on a substrate; and drying the organic EL material in a form of ink placed on the substrate by heating (col. 7, lines 3-67).

Kawase is discussed above, but does not explicitly teach heating while relatively moving a heating device in X, Y, and Z directions to the substrate. However, Gordon teaches that the substrate ink-jet ink may be heated by radiant heaters attached to and at the same level as the nozzles that travel with the nozzles (col. 6, lines 59-68). Also, Nanto teaches that, when printing the red, green, and blue materials for pixels of electroluminescent devices such as plasma display screens, the nozzles may scan in the X- and Y- directions to provide complete coverage of the

screen (col. 8, lines 45-61). Further, the nozzles may be moved in the z-direction to keep the clearance between the substrate and nozzles constant even when the substrate surface is not uniformly flat (col. 6, lines 3-14, 42-60; col. 7, lines 8-38). Therefore, taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have mounted radiant heaters on either side of the nozzles in order to have provided the drying with a reasonable expectation of success because Gordon teaches that such is a suitable arrangement of nozzles and heaters to dry inks deposited on substrates, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to have moved the nozzles (and therefore the attached heaters) in the X-, Y-, and Z- directions relative to the substrate in order to have provided full coverage of all desired pixels and to have maintained a constant clearance between the substrate and the nozzles during printing. with the substrate compare to the ink-jet nozzle and an infrared heater over the substrate.

Kawase is discussed above, but does not explicitly teach that the temperature of the substrate does not rise. Pham teaches that the substrate may already be heated at the time of deposition to accelerate the evaporation of the solvent [0006]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited the ink of Kawase on an already heated substrate in order to have accelerated the drying process. Thus, the temperature of the substrate would not rise during application of the ink, particularly in view of the teachings of Kawase that the substrate temperature has an effect on the process (col. 7, lines 31-33), thereby motivating keeping the substrate temperature constant in order to ensure process repeatability.

Kawase, Gordon, and Nanto are discussed above. Gordon teaches that radiant heaters are used, but does not explicitly teach that they are infrared heaters. However, Eida teaches that infrared heat is a well-known type of radiant heat used to dry organic EL layers [0306],[0312]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used infrared heat as the particular radiant heat of Kawase, Gordon, and Nanto with a reasonable expectation of success because Eida teaches that infrared heat is a notoriously well-known type of radiant heat used to dry EL materials. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of

obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawase '357 in view Gordon '038, Nanto '836, Pham '344, and Eida '532 as applied to claim 1 above, and further in view of Mian et al. (U.S. Patent 6,319,469).

Kawase is discussed above, but does not explicitly teach that the heater is a Peltier element. However, Kawase is open to the use of other heating mechanisms (col. 7, lines 62-63) and Eida teaches the use of multiple heat sources for removing solvent from a layer [0306]. Mian teaches that Peltier heat elements are operative for providing heat (col. 50, lines 53-59). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a Peltier heat element in addition to the infrared heating element of Eida with a reasonable expectation of success because Mian teaches that such elements are operable for providing heat. One would have been motivated to do so in order to have provided additional heating sources. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Response to Arguments

5. Applicant's arguments filed 2/21/07 have been fully considered but they are not persuasive.

The Applicant argues on pg. 7 that infrared heaters are not generally used for heating and drying organic EL material ink because such heaters are not used to heat and dry the ink directly. The Applicant further argues that Noguchi does not disclose or suggest using the infrared heater for the organic EL material ink as described in the present application. However, taking the references as a whole, one of ordinary skill in the art would have been motivated to use an infrared heater as the particular radiant heater. As explained by the Applicant, an infrared heater would still be capable of drying the inks even though the actual process of drying differs from other radiant heaters. In addition, even if the organic EL material is unable to absorb the infrared emission wavelength, the solvent used in the ink would be able to absorb such wavelengths, thus

Art Unit: 1762

evaporating the solvent and drying the ink. Nevertheless, Eida has been included to provide evidence of using an infrared heater to dry EL material, as discussed above.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ushirogouchi et al. (U.S. Patent Application Publication 2003/0231234) is cited as an example of heating ink jet substrates. Kojima et al. (U.S. Patent Application Publication 2002/0187272, paragraph [0030]) is cited of interest for its teachings regarding moving nozzles and substrates relative to one another.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL
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KEITH HENDRICKS
PRIMARY EXAMINER